

DISCUSSION OF THE AMENDMENT

Due to the length of the specification herein, Applicants will cite to the paragraph number of the published patent application (PG Pub) of the present application, i.e., US 2006/0024569, when discussing the application description, both in this section and in the Remarks section, *infra*, rather than to page and line of the specification as filed.

Claim 1 has been amended by incorporating a solvent limitation therein, as supported in the specification at paragraph [0051], combined with the examples in Table 3 at paragraph [0095]. Claim 1 has been further amended by replacing “characterized in that” with the equivalent --wherein--. Claim 11 has been amended as supported in the specification at paragraph [0037].

New Claims 26 and 27 have been added, and are supported in the specification, analogous to the support for above-amended Claim 1.

No new matter is believed to have been added by the above amendment. Claims 1-12, 26 and 27 are now active in the application; Claims 13-20 and 22-25 stand withdrawn from consideration.

REMARKS

The rejection of Claims 1-12 under 35 U.S.C. §103(a) as unpatentable over U.S. 6,309,545 (Penth et al) in view of U.S. 6,200,706 (Ashida et al), is respectfully traversed.

Penth et al discloses a porous inorganic composite that may contain a plastic carrier and be of woven fibers (column 3, lines 50 and 55) and be used as a battery separator (column 9, lines 49-50). Ashida et al discloses nonwoven fabric separators for non-aqueous electrolyte batteries, wherein the fabric may be made from, *inter alia*, organic, including polymeric, fibers (column 3, line 5 ff), wherein the separators have a basis weight of preferably 10-50 g/m² (column 9, lines 32-35), a thickness of preferably 20-60 μm (column 9, lines 35-40), and a void content of preferably 35-80% (column 10, line 26).

The Examiner finds that Penth et al discloses woven fibers of plastic, or polymeric fibers, as an applicable carrier or separator substrate, and that it would have been obvious to make the separator of Penth et al with a basis weight and thickness as disclosed by Ashida et al.

In reply, Penth et al is from the same patent family as WO99/15262, which is described in the specification herein. The specification describes at paragraph [0042] that the coating of the present invention is preferably applied to the substrate by applying to the substrate a suspension comprising at least one electrically nonconductive or only very poorly conductive oxide of the metals Al, Zr and/or Si and also a sol and heating one or more times to solidify the suspension on or in or else on and in the support, which process itself is known from Penth et al, but not all the parameters and starting materials, especially electrically nonconductive starting materials, can be used for producing the separator of the present invention. The specification further describes, at paragraph [0050], that the operation described in Penth et al is not fully applicable to polymeric nonwoven materials in the form of the sols described therein, since the very watery sol systems described therein frequently

do not provide complete, in-depth wetting of the customarily hydrophobic polymeric nonwovens, since most polymeric nonwovens are only badly wetted by the very watery sol systems, if at all. It has been determined that even the minutest unwetted areas in the nonwoven material can lead to membranes or separators being obtained that have defects and hence are not usable. As described in the specification at paragraph [0051], it has now been found that, surprisingly, a sol system or suspension whose wetting behavior has been adapted to the polymers will completely penetrate the nonwoven materials and so provide defect free coatings when non-aqueous solvents are used.

Thus, even if one of ordinary skill in the art were to combine Penth et al and Ashida et al, one skilled in the art would be without the knowledge, provided by the disclosure herein, of making an adjustment to the sol such that adequate wetting behavior of the substrate is obtained. Comparative Examples 1 and 2 are examples of the separator and battery which would result by employing the sol of Penth et al without the inventive contribution made by Applicants herein. As described in the specification at paragraph [0092], only about 90% of the capacity of the cell can be charged with constant current. Inventive Example 3, on the other hand, is according to the present invention. As described in the specification at paragraph [0100], “[o]wing to the distinctly lower internal resistance in the separator, virtually the entire capacity of the cell can be charged with constant current. Owing to the thinner separator and the lower basis weight, not only the mass-based but also the volume-based specific energy density is distinctly above that of comparative example 2.”

Clearly, the above-discussed results could not have been predicted by the applied prior art. Accordingly, it is respectfully requested that the rejection be withdrawn.

The provisional rejection of Claims 1-11 on the ground of nonstatutory obviousness-type double patenting over Claims 1-12 and 25 of copending application no. 10/524,143 (‘143 application), in view of Penth et al, is respectfully traversed. Even if one of ordinary

skill in the art were to combine Penth et al with the claims of the '143 application, the presently-claimed invention would not have been obtained, for the same reasons as discussed above with regard to the prior art rejection. In other words, one of ordinary skill in the art would not know that aqueous sols, as disclosed by Penth et al, are insufficient to provide the necessary wetting behavior or complete penetration of nonwoven materials and so to provide defect-free coatings. Accordingly, it is respectfully requested that this rejection be withdrawn.

The provisional rejection of Claims 1-11 on the ground of nonstatutory obviousness-type double patenting over Claims 1, 3-10, 32-38, 40 and 46-52 of copending application no. 10/501,713 ('713 application) and Claims 1-12 and 31-36 of copending application no. 10/504,144 ('144 application), in view of Penth et al and Ashida et al, are respectfully traversed. The rejection is improper because it is based on the combination of claims in two copending applications, neither of which is prior art. Perhaps the Examiner intended to rely on the '713 application and the '144 application alternatively, in which case there would be two separate rejections. Assuming that to be the case, like the double patenting rejection over the '143 application in view of Penth et al, even if one of ordinary skill in the art were to combine Penth et al with the claims of the '713 application or the claims of the '144 application, the presently-claimed invention would not have been obtained, for the same reasons as discussed above with regard to the prior art rejection, and the double patenting rejection over the '143 application in view of Penth et al.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The objection to Claim 11 is respectfully traversed. Indeed, the objection would not appear to be moot. Accordingly, it is respectfully requested that the objection be withdrawn.

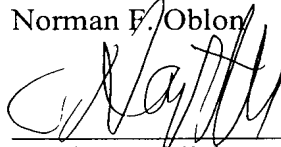
Application No. 10/524,669
Reply to Office Action of March 5, 2009

Applicants respectfully submit that all of the presently-active claims in this application are now in immediate condition for allowance. The Examiner is respectfully requested to rejoin non-elected process claims of even scope, and in the absence of further grounds of rejection, pass this application to issue with all active and rejoined claims.

Respectfully submitted,

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